Setting Up Your Development Environment

Principles of Computing

Fall 2024

Contents

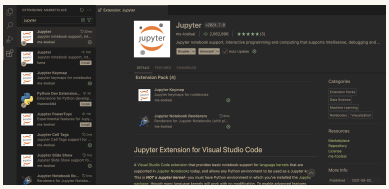
1 *macOS*

1. Open the `Terminal.app` application by searching with ⌘+`Space`.[1,2]
2. Install `Homebrew` by running the commands below.
   (a) `/bin/bash -c "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/install/HEAD/install.sh)"`
   (b) `(echo; echo 'eval "$(/opt/homebrew/bin/brew shellenv)"') >> /Users/"$USER"/.zprofile`
   (c) `eval "$(/opt/homebrew/bin/brew shellenv)"`
   (d) *Refresh your shell* by performing *either one* of the following:
   - ⌘+`W` to close the window. ⌘+`N` to open a new window.
   - ⌘+`Q` to quit. Reopen the application as in step 1.
3. Install `Python` by running `brew install python@3.12`.
   (a) Once installed, *refresh your shell* as in step 2(d).
   (b) Run `python3 --version` in the terminal.
   (c) You should see the message `Python 3.12.4` in the terminal.
4. Install `VSCodium` by running `brew install --cask vscodium`.
   (a) Open `VSCodium` by running `codium` in the terminal.
   (b) Press ⌘+⇧+`X` to open the Extensions side panel on the left.[3]
   (c) Search for the *"Jupyter"* extension and install it.[4]
   (d) Press ⌘+⇧+`P` to explore the *command palette* and explore.[5]
   (e) Press ^+⇧+`` ` `` to open a *VSCodium terminal* and explore.[6]

[1] ⌘ = `command`

[2] This application is called `Spotlight`.

[3] ⇧ = `shift`

[4]


[5]


[6] ^ = `control`

2 *Linux*

You should be able to follow the instructions for section 1 pretty closely, though your keyboard shortcuts will look different and your package manager will not be `Homebrew` (this will depend on your Linux distribution). For more help with Linux, please see the instructor.

1. Open a terminal window.[1]
2. You can check to see if `Python 3.12` is already installed by running `python3 --version` and checking the output.[2] If it's not already installed, install it using your Linux distribution's package manager.
   - Arch Linux: `sudo pacman -S python`
   - Ubuntu: `sudo apt-get install python`
   - Linux Mint: `sudo apt-get install python`
   - Fedora: `sudo dnf upgrade --refresh` and then run `sudo dnf install python`
3. Install and set up `VSCodium` using your package manager or by downloading a binary from https://vscodium.com/.

(a)
- Arch Linux: `yay -S vscodium-bin`
- Ubuntu / Linux Mint / Fedora:

```
wget -qO - https://gitlab.com/paulcarroty/vscodium-deb-rpm-repo/raw/master/pub.gpg \
    | gpg --dearmor \
    | sudo dd of=/usr/share/keyrings/vscodium-archive-keyring.gpg
```

```
echo "deb [ signed-by=/usr/share/keyrings/vscodium-archive-keyring.gpg ] \
      https://download.vscodium.com/debs vscodium main" \
    | sudo tee /etc/apt/sources.list.d/vscodium.list
```

```
sudo apt update && sudo apt install codium
```

(b) Open `VSCodium` by running `codium` in the terminal.

(c) In the Extensions tab, search for and install *"Jupyter"*.

(d) Press `ctrl`+`shift`+`P` to explore the *command palette*. You can try creating a new *Jupyter notebook*.[3]

(e) Press `ctrl`+`shift`+`` ` `` to open a new *terminal window* and explore.

[1] How this is done depends on your Linux distribution and choice of terminal emulator; you can try `ctrl`+`alt`+`T`.

[2] A version of `Python` is probably already installed with your distribution, but it may be older than version `3.12`.

3 *Windows 10/11*

For more detailed help with Windows, please see the instructor or TAs.

Option 1: Windows Subsystem for Linux

1. Open a `PowerShell` terminal with *administrator* privileges[1]
2. Run `wsl --install` to install the Windows Subsystem for Linux.[2]
3. *Restart* your computer by *turning it off* and then *turning it back on*.[3]
4. Run `sudo apt update` and then `sudo apt install python` to install `Python`.
5. Install `VSCodium` by following step 2 below or step 3(a) in page 2.[4]

Option 2: Installation Wizards

1. Install `Python` as follows.
   (a) Go to `https://www.python.org/downloads/release/python-3125/` and download the appropriate version of `Python` for your system.[5]
   (b) Open the installer, check the *"Add Python"* and *"Admin"* boxes.
   (c) Proceed; check to disable the *"path length limit"* if prompted.
2. Install and set up `VSCodium` as follows.
   (a) View releases at `https://github.com/VSCodium/vscodium/releases`.
   (b) Download the installer from `https://github.com/VSCodium/vscodium/releases/download/1.92.2.24228/VSCodium-x64-1.92.2.24228.msi`.
   (c) Open the installer and proceed through the installation wizard.
3. Install `Git` as follows.
   (a) Download the `Git` installer from `https://github.com/git-for-windows/git/releases/download/v2.46.0.windows.1/Git-2.46.0-64-bit.exe`
   (b) Open the installer and proceed through the installation wizard.

VSCodium Setup

1. Set up your `shell` in `VSCodium`.[6]
   (a) Open a new `VSCodium` terminal with `ctrl`+`shift`+`` ` ``.
   (b) Verify that your shell is set to either `bash` or `git bash`.[7,8]
2. Install `Jupyter`.
   (a) Press `ctrl`+`shift`+`X` to open the Extensions panel on the left.
   (b) Search for and install the *"Jupyter"* extension.
   (c) Press `ctrl`+`shift`+`P` to explore the *command palette*.

[1] Right click on the *PowerShell* application and click *"Run as administrator."*

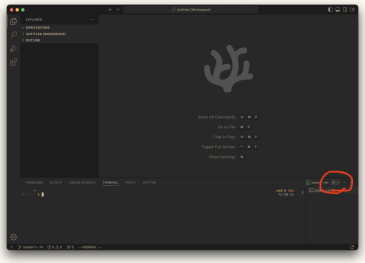
[2] This installs a version of *Ubuntu Linux*. Before running this command, you can run `wsl --list --online` to see a list of available distributions. You can install your preferred distribution with the command `wsl --install -d mydistro`.

[3] Note that this is not the same as *resetting* your computer, which involves deleting all your files and restoring the computer to a new-from-factory state! Please *do not factory reset* your computer!

[4] Follow the Ubuntu instructions if you used the default Linux distribution.

[5] This will most likely be the one that reads `"Windows installer (64-bit),"` which will download an installer with the filename `Python-3.12.5-amd64.exe`.

[6] A `shell` is the process that interprets and runs commands in a terminal. Windows comes with the `PowerShell` by default, but we will be using `bash` or `zsh` this semester (these two are interchangeable for our purposes).



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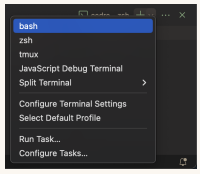
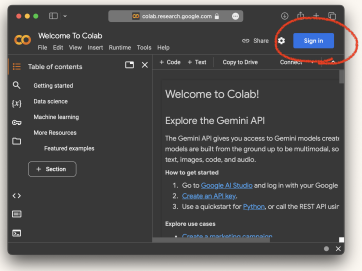


8

4 *Google Colab*

This is only recommended as a *last resort* if the other options are unavailable to you. This will require a Google account and a working internet connection.

1. Go to `https://colab.research.google.com`.
2. Click the blue button at the top right[1] and sign in with your preferred Google account (*e.g.*, you can use your Notre Dame email, which will prompt you to sign in through Okta).
3. You should now be prompted to create a new notebook.[2] Once created, your screen should look something like the screen below.



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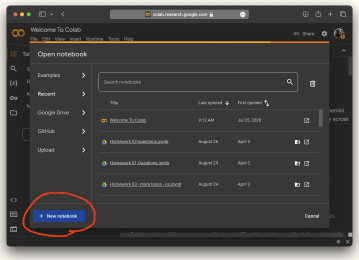

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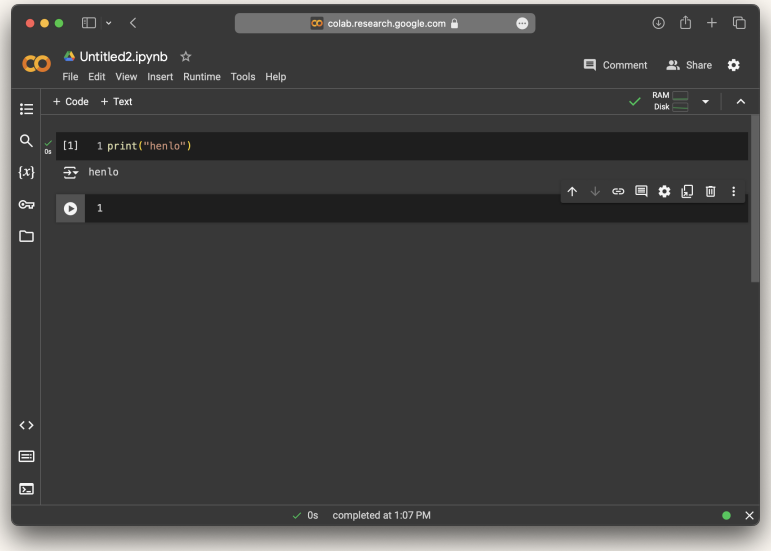

4. You can now begin exploring Jupyter notebooks with Python. You can download your notebooks using the menubar at the top.